

The
Lamp
March 1953

MARYGROVE COLLEGE LIBRARY
DETROIT, MICHIGAN
PLEASE DO NOT REMOVE

APR 28 1953







WHEN NATIONS SOW THE PETROLEUM..... 2

In Venezuela, in Saudi Arabia and in other countries as well, revenues from oil are helping to speed economic and social development

VERMONT STOREKEEPER..... 7

Life in his Green Mountain hamlet centers around his store, little changed in thirty-three years except for the addition of the gasoline pump outside

CORPORATIONS AND EDUCATION..... 8

by Frank W. Abrams

The chairman of the board of Jersey Standard discusses problems of corporate aid to higher education, and outlines a proposal that may help to solve them

PANAMA PASSAGE..... 10

by James H. Winchester

The Canal, as seen from a tanker's bridge, is an engineering marvel and an economic lifeline which we're inclined to take for granted

HE HAS COUSINS BY THE DOZENS..... 16

They're the friends the right-of-way man makes in his calls on landowners along the pipeline route

MUSIC ON THE MOVE..... 20

North Carolina's symphony doesn't wait for music lovers to seek it out; it takes to the highways and brings music to them

OIL HUNT IN THE NORTH COUNTRY..... 24

Air transport moderates the rigors of wilderness life for field parties in northwest Canada

STANDARD OIL COMPANY (NEW JERSEY)

30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

Published four times a year
primarily for employees and stockholders
EUGENE HOLMAN, *President*

F. W. ABRAMS, *Chairman of the Board*

J. E. CRANE, O. HARDEN, C. F. SMITH, E. E. SOUBRY, J. R. SUMAN, *Vice Presidents*
L. D. WELCH, *Treasurer* J. C. ANDERSON, *Comptroller* A. C. MINTON, *Secretary*

Each company affiliated with Standard Oil Company (New Jersey) manages and controls its affairs through its own directors and officers. The use of such items as "company," "Jersey," "organization," "our," and "its," when applicable to such companies, is only for convenience and simplicity.

Copyright 1953 by Standard Oil Company (New Jersey). For permission to reproduce any portion of the magazine, apply to the Editor of THE LAMP, 30 Rockefeller Plaza, New York 20, N. Y.

THE ESSO TANKER silhouetted against an early morning sky was photographed for our cover by Rudy Arnold, as the vessel lay off Colon at the Atlantic end of the Panama Canal. He also made the color photographs of the Canal which accompany James H. Winchester's "Panama Passage," commencing on page 10. Mr. Winchester is a New York newspaperman and free-lance writer, several of whose articles have appeared in previous issues of THE LAMP.

CREDITS: Pages 2-5, Joe Spier; Page 7, Victor dePauw; Page 10 (map), Wittich Holloway; Pages 16-19, Bettina Steinke.

EXPECTANT CHILDREN gather before the church at Talara, an oil town on the northern coast of Peru, where a fireworks pinwheel stands ready for a celebration to be held in honor of the patron saint of local fishermen

WHEN NATIONS

OF the many changes oil has brought to the world few have been more striking than the advancements in health, education, technical skills and general well-being that have been made by some of the oil-producing nations. Revenue from the oil industry has frequently acted as a catalyst to hasten the growth and development of these nations in ways that extend far beyond the oil operations themselves.

Two countries of widely different culture, race and physical nature are chosen here to illustrate this process. Saudi Arabia represents a stage of development little more than ten years along. Venezuela shows, by contrast, the results of nearly three decades of change. Of course, Venezuela and Saudi Arabia possessed, to start with, oil resources of a magnitude equaled in few other countries. Nevertheless, similar stories, even if on a lesser scale and modified by different local circumstances, could be told of Colombia or Peru, of Iraq or Indonesia.

All these nations had within their borders a dormant source of energy which could be of no use to them or to the world without the application of capital, experience and technical knowledge to the problems of development. To bring these essentials together, they invited the cooperation of enterprise from abroad, and from this fruitful association all have benefited.

Venezuela

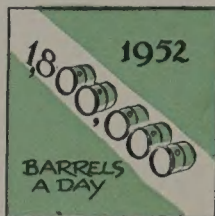
Sometime this year, a Venezuelan workman will tamp down a patch of steaming asphalt, and one of the world's most modern and spectacular highways will be ready for all the cars that will speed over its bridges and through its two, mile-long tunnels. It is the new *autopista*, a four-lane superhighway that slices through the craggy sierra between the Caribbean seaport of La Guaira and the mountain capital of Caracas, cutting the ten and a half mile trip from more than an hour to less than fifteen minutes.

To Venezuelans of an earlier generation the *autopista* would probably seem a beautifully engineered mirage. For one thing, its cost is six times greater than Venezuela's total federal budget in the years when early explorers for oil traveled the country's remoter regions with mules and machetes.

Today, the oil discovered by these explorers has brought benefits that have seeped into almost every phase of the

country's economic and social life. Imbued with a progressive spirit, the nation has become prosperous. It is telescoping an age of industrial growth into a few years.

Oil and Prosperity



Venezuela's 1952 budget was \$585 million, 62 per cent of which was derived from the oil industry. It was the highest budget in Venezuelan history.

Venezuela today has no external debt. She is the largest exporter of crude oil in the world, and these exports enable her to trade freely in any currency. Backed by more than 100 per cent gold holdings, the bolivar, Venezuela's unit of exchange, is as acceptable in international trade as the U. S. dollar. In the past ten years, foreign trade has increased more than 700 per cent, and Venezuela is currently spending almost \$600 million a year for goods produced in the United States.

The growth of Venezuela's finances closely parallels the growth of her oil industry. Last year, the country's wells produced 1,800,000 barrels of crude oil a day—the highest production in her history.

"Sow the Petroleum"



The rise of oil production has also helped to stimulate the rise of business activity throughout the country. This can be seen most vividly in the beautiful white city of Caracas, where old Spanish homes and museums containing cultural treasures stand side by side with new skyscrapers. Business is booming in this city of perpetual spring, and the reason lies in a policy formulated nearly twenty years ago.

That policy is best expressed by the phrase: "Sow the Petroleum," a national slogan that means oil revenues should help Venezuela take her place in the community of industrial nations.

It has been the stated policy of Venezuelan governments over the years to use revenues from her largest industry to

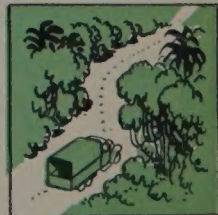
help develop smaller ones. Public agencies have spent millions helping businessmen and farmers to finance industrial plants and increase food production. Other public works programs have also aided industry by providing cheap power, and have helped both industry and agriculture by building new transport facilities. Vast public social projects, such as the building of hospitals and schools, largely paid for by oil revenues, have paved the way for many local enterprises whose prosperity in turn has given rise to other new businesses.

The oil companies directly aid local business in many ways. Whenever possible, they purchase their requirements within the country. Their capital investments, which have amounted to \$2.5 billion since 1920, are also a significant factor in Venezuela's continuing prosperity, and so are the salaries and bonuses of the oil workers.

Today, at the peak of her prosperity, Venezuela has two fundamental economic problems. The first arises from the fact that a high percentage of consumer goods has to be imported from abroad. Consequently, prices are high. As the economy continues to prosper, however, factories and plants are springing up to produce goods locally. Some of these turn out products identical to those imported, for many U. S. manufacturers are combining with Venezuelan investors to build factories in Venezuela. Venezuelan industrialists also are building their own plants to manufacture for the booming local markets.

The second problem concerns the imbalance of an economy overly dependent upon one industry. The government is now searching for ways to develop greater diversification. In the belief that what is good for Venezuela is good for them, the oil companies are also working on the problem. Jersey's Venezuelan affiliate, the Creole Petroleum Corporation, for instance, recently appointed a committee of specialists to help find a solution to the problem of diversification through the development of new basic industries.

Building New Roads



Ever since oil revenue began to swell the national treasury, a high percentage of

SOW THE PETROLEUM

it has gone into the building of roads that would withstand heavy floods and open up the country to commerce. In addition, the oil companies have built more than 1,500 miles of roads, most of which are now used as public highways.

But many roads are still too narrow and too devious for heavy traffic. This is reflected in the mottoes, such as "Patience—life is like that," painted on the front fenders of commercial trucks. A considerable amount of freight is also carried by the Venezuelan airlines. They haul everything from electric refrigerators to hothouse grapes, and they cover almost every part of the country. Commerce and agriculture will move ahead even faster, however, when Venezuela opens up more of the country with good roads.

Toward A Healthier Nation



Though Venezuela has "sown its petroleum" into almost every phase of public welfare, its nation-wide health program has yielded the most abundant harvest of results, at once immediate and far-reaching.

For example, malaria, which used to be the leading cause of death in Venezuela, has been all but eliminated through a campaign that stalked anopheles mosquitoes from one end of the country to the other and snuffed them out with DDT. Other public health campaigns, while not as dramatically successful as the malaria campaign, are making marked inroads against malnutrition and such diseases as typhoid fever and dysentery.

Today there are public health units and clinics throughout the country, bed-care facilities in all the larger cities and modern clinics in many of the villages.

To guard the health of their employees, the oil companies support medical staffs, whose work through the years, particularly in the field of constructive medicine, has often been of value to Venezuelan health authorities. The government's successful DDT campaign against malaria, for instance, was aided by Creole's medical department in areas where the company operates.

Oil company doctors and the Venezuelan health authorities work together, and both groups make their findings available to doctors throughout the country.

Thus, the medical progress made by the oil industry is of value in raising the health standards of the Venezuelan people.

Bringing Science to Farms



An agrarian country for centuries, Venezuela has only recently begun to apply scientific techniques to her farms.

There are still hundreds of *conucos*, the tiny, dusty farms of the interior, on which families eke out a meager living with primitive tools. In contrast, however, are the big experimental projects, many of them publicly financed, where Venezuelan farmers are learning the use of modern machinery and the best methods of farm production. Research programs, sponsored by the Agricultural Institute, are making headway in fields vital to Venezuela's farm prosperity: soil conservation, flood and weed control, development of better grasses for grazing, and soil chemistry.

A sizeable share of the federal budget—more than \$100 million in the past ten years—goes into these projects, all of which are directed toward achieving higher production of Venezuela's traditional crops of coffee, cocoa, corn, sugar cane, rice, and a greater diversity through new crops. Various private groups, such as farmers' and breeders' associations and the Venezuela Basic Economy Corporation, to which oil companies contribute financially, are also working to raise production.

The Chance To Learn



In the pastoral days before the oil derricks began to rise out of the yellow-green waters of Lake Maracaibo, few but the wealthy in Venezuela had a chance to go beyond grade school.

In recent years, however, with a budget based largely on oil revenues, Venezuela has put on a program to spread the light of knowledge throughout the land. More than 400,000 pupils are now attending Venezuela's 6,500 public schools, most

of which have been built within the past fifteen years. There are now modern, well-equipped high schools in all the principal cities. At the same time, a concentrated drive to improve literacy is spurring many adults to go to evening classes.

The oil companies also participate in the campaign. A few years ago Creole was able to report that literacy among its employees had risen from 12 to 84 per cent in ten years. Schools in the oil camps, which are often attended by oil workers as well as their children, are supervised by the Ministry of Education, and the curriculum is prescribed by law.

As Venezuela moves into the industrial age, interest in higher education is also growing. There are three public universities supported by the nation. The oil companies have long followed a policy of encouraging promising young Venezuelans by offering a number of scholarships. Creole, which has the largest scholarship program of any Venezuelan oil company, awards 245 every year.

One Million Jobs



To do the work of the industrial age, Venezuelans are learning new skills for new jobs, and the consequent changes in their lives are making a deep imprint upon the social fabric of the country.

White collar workers, for example, were unknown to the agrarian society of thirty years ago. Today, working in the offices of government ministries and businesses that have grown up in recent years, they comprise a whole new segment of a middle class that is having an increasing influence upon Venezuela's development.

A similar change has taken place in the lives of the workers who once toiled on the land and are now working in the new factories, plants and oil fields. Altogether, there are nearly a million wage earners in Venezuela today. Many, of course, are employed on farms and great coffee and cocoa plantations, as their fathers were before them, but to a large number of Venezuelans the oil prosperity of recent years has meant a new way of life.

In 1936, Venezuela enacted liberal labor laws which provide for, among other things, paid vacations, a profit-sharing bonus and limitations on hours.

The oil companies have enjoyed such excellent labor relations that their policies have been considered by many Venezuelans as setting a pattern of good labor practices. The 45,000 oil workers have a standard of living higher than any other large group of workers in the country.

But more important to Venezuela's future growth are the opportunities an oil worker has to equip himself for skilled jobs through company training programs.

It goes without saying, perhaps, that the first rule of the oil companies' labor relations policies is to employ Venezuelans in all possible positions. This has worked out particularly well at Creole, where more than 90 per cent of all employees are Venezuelan citizens. Scores of geologists, petroleum engineers and other top grade technicians are Venezuelans, and so are all the company doctors.

Saudi Arabia

TWENTY years ago, Saudi Arabia's chief source of direct and indirect revenue was the tax on Moslem pilgrims to the holy cities of Mecca and Medina. At best, this paid for little more than essential imports plus such internal security as was afforded by the Saudi army and by subsidies in money and food to many of the Bedouin tribes. Indeed, in poor pilgrimage years, the Saudi government was hard put to find ways of operating at all.

Saudi Arabia covers by far the larger part of the huge Arabian peninsula. The country is a third as big as the United States, but four-fifths of it is desert, with no rivers, no lakes, no trees, no fences and in most parts no roads other than camel tracks.

Its population is usually estimated at a scanty 3.5 million. Forty years ago, when the King ruled a smaller area than he does today, 95 per cent of his population consisted of Bedouin who wandered with their flocks and warred constantly over the water holes.

Forty years ago, however, Abdul Aziz, now King ibn Saud, began settling the Bedouin in farm colonies around the old wells where farming had been practiced in ancient times; and it is estimated that the proportion of nomads in his population has now declined to 55 per cent.

But he was still unable to raise nearly enough food to feed his population. Farming and industry together could not even support the Saudi government, to say nothing of paying for needed imports of food and manufactured goods.

Into this underdeveloped country, two American oil geologists stepped ashore in September 1933 at the Arab port of Jubail on the Persian Gulf. Finally, in March 1938, oil was found in commercial quan-

ties beneath the desert; and the first prospect of substantial oil revenues for the government arose.

But the prospect had no sooner arisen than it was blacked out by World War II. Pilgrim revenues were cut to practically nothing. Virtually all imports were cut off; and the few oil company employees who remained divided their time between oil, raising their own food and helping the government through its very serious food difficulties.

Using camels themselves to move their oil supplies, they loaned their motor trucks to the government to move food inland from the Gulf port of Qair to the national capital, Riyadh, a distance by road of some 350 miles. To increase the government's food production, they installed Diesel pumps in the deep natural pools of the Kharj district south of Riyadh and dug an eleven-mile canal which put 3,000 acres under irrigation.

It was not until after the war that crude production began rising rapidly to its present high level of 800,000 barrels a day, an output which today ranks Saudi Arabia just after Russia as fourth greatest of the world's oil-producing countries.

Deluge of Change



The full impact of oil, which down to last June had required a gross investment of \$500 million, has thus had only the few years since the war in which to make itself felt. By this time, however, it is sweeping through the country with the pervasiveness of a desert sandstorm.

Better sanitation and improved water supplies in the towns are advancing community health. Arab workmen are building schools, and the government is granting generous allowances to students who go on from the elementary schools to the high schools. In the oil towns, modern housing is taking the place of the old palm-frond shelters known as "barastis." All through the oil country and in the larger centers elsewhere, electric street and house lights are coming into use. Electric power is driving water pumps that used to be powered by donkeys.

The Saudi government at last has adequate means to finance this deluge of change. Having entrusted the development of its oil resources to Arabian American Oil Company (Aramco), in which Standard Oil Company (New Jersey) holds a 30 per cent interest, the Saudi government now draws direct oil revenues exceeding \$100

million a year, plus the indirect revenues which it derives from activities related to oil. Its pilgrim levies have been rescinded.

It also draws technical guidance from its partnership with Aramco. More than 1,000 men, recruited by Aramco, are working for the government today on such technical projects as the Saudi Government Railroad and the Kharj farms.

Thousands of Saudi Arabs in the oil-producing Hasa province along the Persian Gulf are being introduced to a new life by this unique partnership. Out of the company's 23,500 field employees, 14,000 are Saudi Arabs. Many of them had never known regular pay-days before they came to Aramco. Some 20 per cent of them had never seen a Westerner. Thousands were Bedouin fresh from the desert.

Training the Arab Recruit



Aramco starts them with a series of screening tests to find out what they can do. It goes on to develop their abilities until every trainee is thoroughly familiar with one kind of job. (Aramco uses about 1,400 kinds of jobs.) So Bedouin who were raised in the desert become skilled at all sorts of work, from truck driving to running oil-processing plants.

Having learned trades, they soon have money in the company's savings fund. Some of them before long attend night schools. Some eventually buy houses and small date groves. Former nomads like these become as truly settled as are those in the King's farm colonies.

Hundreds of Saudi Arabs have gone on to become independent contractors and businessmen. In the last five years, Aramco has awarded some \$37 million of its own contracts to about 700 Arab contractors. Arabs now engage in all sorts of businesses, from the operating of electric power plants to the manufacture of ice cream, of which their countrymen are very fond. In one Arab town in the oil country, the number of Arab stores has increased since the war from about ten to more than 200.

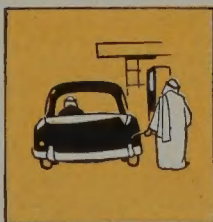
Similar changes are reaching as far back into the desert as Riyadh, where the flat roofs are dominated by the battlements of the great palace in which the King was born. But perhaps the most remarkable of the capital's physical changes has been its designation as the western terminus of the Saudi Government Railroad which has succeeded the motor trucks that carried food from the port of Qair to Riyadh during the war.

Oqair lacks facilities for the cheap and expeditious handling of cargo. But a new government port has now been built at Dammam on the Persian Gulf, where a seven-mile pier enables ocean vessels to discharge directly into railroad freight cars. From the pier, the railroad runs via the American oil towns of Dhahran and Abqaiq and the King's experimental farms at Al Kharj to Riyadh, a rail distance of 357 miles. Imports are today reaching Riyadh about nine hours after they leave Dammam pier. Twenty years ago, camels took ten days to make that desert trek.

Diesel-electric locomotives, air-conditioned passenger cars, flat cars, box cars, tank cars, gondola cars, refrigerator cars and every nut and bolt of this \$50-million port and railroad have had to be imported. But with oil revenues to finance it, the entire project has been carried through by the government, with Aramco supplying technical assistance.

Aramco has also improved a number of vehicular roads for the government, notably in and around the oil towns and in the Riyadh area. The whole country from Syria to the Persian Gulf is now traversed by a new road that follows Tapline, the huge 1,000-mile pipeline that carries Saudi crude oil across the desert to a marine terminal at Sidon on the Mediterranean. Over on the Red Sea side of the country, the forty-seven-mile road from the port of Jeddah to Mecca, one of the most traveled roads in the country, has been paved with asphalt from the Ras Tanura refinery.

Arab Service Stations



All over Saudi Arabia, in the towns along the unimproved roads that follow the old caravan routes, Arab service stations have been set up; and the increase in Arab motor traffic is indicated by the rise in Aramco's domestic sales of refined products from 1,000 barrels a day in 1949 to 1,800 in 1951.

Aramco has been active, too, in health measures. Seven thousand patients entered its hospitals in 1951 and 400,000 out-patient treatments were given. In the same year, local Arab contractors, working under Aramco's direction, sprayed 800,000 gallons of DDT solution in eighty-two towns. Both the government and local communities are being helped with their sanitation, water supply and rodent problems; and traveling medical units are now being discussed, Aramco to supply the doctors, the government to pay the cost.

Led by Aramco doctors, Arab anti-malaria crews have completed a year's spraying at the Jabrin oasis where 900 water wells and 7,500 acres of fertile land had had to be abandoned because of the high death rate from malaria. Tests have now shown no trace of the malarial mosquito in the Jabrin wells, and the oasis is expected to be resettled.

Oil, in fact, is doing so much for the country that it is not always easy to bear in mind the basic program which underlies all else that is happening. This is the government's program of settling the Bedouin in farm colonies—as basic today as it has been for the last forty years. The most important factor in this program is the finding of more water in the huge and relatively waterless country.

The Water Problem



While they vary locally, Saudi Arabia's rains are usually limited to a few brief showers between November and the end of April, adding up to an average of perhaps four or five inches a year for the country as a whole. (New York City averages forty-three inches.) Most of the rainfall sinks into the ground where it is either caught and stored by local rock formations or flows underground for long distances before it is trapped.

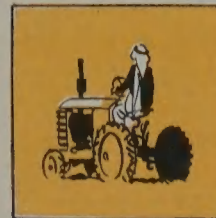
In some places, hand-dug wells go down 200 feet to reach it. Drilling rigs, using oil drilling techniques, sometimes find water 500 to 800 feet down and obtain a good supply by pumping. Occasionally, water lies in deep open pits in the fractured earth like those of the Kharj district. Or it returns to the surface in big flowing springs such as those of Hofuf, by far the largest of the Saudi oases, where 150,000 people and more than two million date palms thrive on a fertile area of 25,000 acres.

During the war, the Saudi government obtained an agricultural mission from the U. S. government to map its underground water resources; and after the war, a Department of State official in Washington expressed the belief that the country's cultivated acreage could be multiplied ten times over by the full and careful use of its underground water.

Toward this long-range objective, Aramco has been assisting by cooperating with the government in the drilling of water wells, notably in the Riyadh area: by supplying technical aid to Arab well drillers; by conducting regional water investigations; and by helping to conserve water through its

Arabic-language motion picture "Water." The film shows how this all-important national resource is tapped by the drill and how important it is not to waste it.

Modern Farming Methods



A second vital factor in the government's colonization program is the training of the Arab farmer in the most modern farming methods. Largely barren though the huge country is, its home-raised foods are nevertheless of sufficient variety to include the luscious grapes and pomegranates of the mountainous region along the Red Sea, the dates, grains and vegetables of the desert oases and the camels and fat-tailed sheep of the Bedouin.

But the lead in the development of more modern farming methods and more diversified crops has been taken by the King's farms in the Kharj district of the desert, fifty-six miles south of Riyadh.

During the food troubles of the war, the King's farms were operated for a time by the U. S. Foreign Economic Administration. Since the war, their operation has been taken over by Aramco at the government's request. Aramco has brought out experts from New Mexico, Arizona and Texas; and Arabs and Americans are developing together methods which neither could have developed alone.

Other experimental farms have been launched and taken over by the Saudi government's Department of Agriculture which is now on a million-dollar budget. Aramco's services range from supervision of the King's farms down to tractor maintenance at some of the department's farms, the government paying the costs.

Oil is thus exerting more than a local influence. Its revenues and technical aid are enabling the King to continue the shifting of his country to a new basis of settled populations. The added water resources and increased farm yields produced by this partnership between East and West are assuring the Saudi Arab of enough to eat and enough to wear.

Twenty years ago, if he wanted to go from one town to another, he walked or rode a camel. Today he is carried rapidly to his destination by the Saudi Government Railroad or a bus.

Out of his long isolation, he is moving at last into the main stream of the world's progress. In this forward movement of a great land, oil is making available to the Saudi Arab the best technical advantages that Western civilization has to offer.



AROUND THE STOVE in Harold Richardson's general store in East Orange, Vermont, the neighboring farmers talk mostly about cows and

crops. Harold always joins in, for he used to be something of a dairy farmer himself; he was Master of the local Grange for six consecutive years

VERMONT STOREKEEPER

In a village hidden in the Green Mountains, he tends a store more than a century old



AT dawn the village is washed in a cold blue light, and even the church steeple rising above the trim clapboard houses is a gray-blue silhouette against the rolling, snowy whiteness of the meadows and hills.

Harold Richardson awakes and shivers. In exactly three minutes, he has dressed and padded softly downstairs to his store. He pokes at the dying embers in the big pot-bellied stove, throws on an armful of kindling wood, and presently the fire flares up, crackling and popping. Harold stands there, feeling the heat and breathing in the smell of burning pine and hot, old metal.

As proprietor of the only store in East Orange, a tiny village hidden in the Green Mountains of Vermont, Harold would no more let that fire go out than he would try to milk a cow from the left-hand side. Vermonters are tolerant folk, but one thing they'd never forgive is a cold stove in their country store.

Now there is the muffled squeak of rubber boots against the crusted snow outside. The door swings open, and a young man, his glowing face ringed by a yellow stocking cap, stamps in. Soon the stove will be encircled with young men who are waiting, grimly, for the bus that will take them off to high school in Bradford, a town fifteen miles down the valley. None waits as impatiently as Harold, for after the bus pulls out he can go upstairs and have breakfast.

But, like as not, before he's half finished, he will hear the door slam shut below, meaning that a customer or a crisis is in the store. It could be anything: an emergency, like the time the Taylors' barn caught fire, and Harold rang the operator on his party line. Within minutes, every farmer and woodsman in a radius of ten miles was on the way to join the bucket brigade. Or perhaps a farmer from back in the hills wants to use Harold's phone to get the doctor from Topsham for his wife or his child.

Of course, the slamming of the door may mean a customer, looking for a loaf

of bread, a sack of fertilizer, or five gallons of Esso gasoline. The gasoline pump outside near the doorstool is one of the few innovations Harold made after he bought the store thirty-three years ago, in the days when his gasoline was delivered in tank wagons drawn by mules.

Through the years, oil products have become an increasing part of Harold's general store business. When he started, there were far more small dairy farms in the neighborhood, and his sales of food, clothing, grain, and farm equipment were relatively large.

In the thirties, however, young people tended to leave the valley for jobs in the cities, and consequently many of the small farms were abandoned. Harold was able to make up for this, in part, from an increasing demand for gasoline and oil. The large dairies that have grown up in the past twenty or thirty years need oil products for their trucks and motor-driven equipment. And today even the smaller farms are becoming mechanized, though some in the back country not far from East Orange still are lighted by kerosene lamps, for which Harold also supplies the fuel.

Aside from the Esso pump, Harold's store is pretty much the same now as when he bought it. In fact, it probably has changed little since the first owner knocked bung holes in a barrel of molasses and a barrel of vinegar and declared that he was in the grocery business. And that, Harold guesses, was "better'n 100 years ago."

Behind the long wooden counter, worn almost satiny from a century of grocery bundles sliding across it, are the shelves of canned goods, neatly stacked as high as the ceiling. In contrast, the counter on the other side of the store is a glorious hodge podge: heavy woolen gloves, an old lamp with a stained glass shade, dish cloths, red lumber jackets, chocolates and mittens.

In back, behind the stove, are sacks of grain, barrels of beans, a table piled with overalls and dungarees, a brace of wide-

brimmed straw hats hanging on the wall.

You have the feeling, when browsing through Harold's store, that if you looked long enough, you could dig up anything you could want. One thing you can't find, though, is a cracker barrel. The thick, flaky crackers that used to come in barrels are now protected from germs and hungry philosophers by modern packages.

After he has finished breakfast, Harold sits in one of the rockers near the stove and waits for Alvin MacLeay, the RFD postman, a redfaced, cheerful Scotchman who stomps in with the mail every morning around nine o'clock.

By the time he's seen his mail and glanced at the newspaper, Harold begins to have more visitors. He has the reputation of being a shrewd Yankee trader as well as a man who will go to any lengths to help the farmers around East Orange. They are always dropping in to ask his advice.

MEANWHILE, his wife Ada is bustling around the kitchen upstairs as if she were cooking a meal for a small army, and as a matter of fact she is. "I have twenty-three for dinner every day," she exclaims breathlessly. The twenty-three are the total enrollment of the grammar school across the street. Every day the youngsters troop over to the Richardsons' for dinner, served as part of Vermont's Parent-Teacher program.

In the evenings, the two rockers and the long, straight-backed settee are always occupied. The farmers and the woodsmen keep up the old tradition of making the general store a kind of casual meeting hall. Harold likes to lock up at eight o'clock but it is usually about nine before the last visitor decides that it is time to get some sleep.

Then, Harold banks the fire and starts up the stairs for bed. About halfway, he stops, turns around, goes back to the stove. After studying it a minute, he tosses in another log and again pads softly up the stairs.

CORPORATIONS

EDITOR'S NOTE: *The following article by the chairman of the Jersey board sets forth the need for contributions to education on the part of business, and explores some of the inherent problems. It was adapted from a talk given recently by Mr. Abrams before the annual Tuition Plan Luncheon. THE LAMP invites comment from stockholders and others on this subject.*

THE public today expects corporations to be good and constructive citizens. The people who own and manage corporations wish to meet and fulfill this public expectation. Increasing numbers of business managers, I believe, feel that corporations should not take substantial benefits from their membership in the economic community while avoiding the normally accepted obligations of citizenship in the social community.

This widening sense of social consciousness is disclosed in many ways: enlightened employee policies, openness in relations with shareholders, greater participation in community efforts. Here I want to talk about still another area, that of business contributions to private educational institutions.

Present-day policy in taxation has gone pretty far in eliminating the large private benefactor, and there is little evidence that he will ever return. The accumulation and inheritance of large fortunes is rarely possible today. The corporate giver has gradually been taking on more of the load from the private giver.

There has been a question, though, whether corporate funds may properly be used for such purposes. Happily, there is a large and growing school of thought which believes that reasonable aid to worthy activities, including education, is a justified use of the corporation's money.

I WAS interested to note, in a report of the Commission on Financing Higher Education, that 60 to 75 per cent of community leaders, stockholders and the general public, in response to opinion surveys, have declared themselves in favor of corporation contributions for general welfare purposes, including higher education.

It also appears that many of the legal questions which have blocked corporate giving in the past may now be melting away. Many states have passed laws clarifying the right of corporate managers to make qualified grants. Perhaps the most difficult legal hurdle has existed in New Jersey and in a few other states where the law has been difficult to interpret and apply. Fortunately, a case has been entered

in the New Jersey courts that may soon bring a clear answer to this knotty question.

The influence of these legal questions should not be lightly dismissed. To what should a corporation contribute and how much? The common law gives no answer for general application. If a board of directors should fall into legal error in making a contribution, the directors would be personally liable. Many, if not most, directors—the top level employees of their corporation—today are men of relatively moderate means. Naturally, the threat of personal liability has helped to prevent the development of a positive attitude toward giving.

Encouraged by state legislatures and by satisfactory experience, however, confidence is growing in the appropriateness and legality of reasonable contributions. I believe that this trend will continue.

Tax legislation also has, of course, influenced corporation giving. Under today's tax structure the government more than matches a corporation's dollar contributed to approved activities. I am impressed with the common sense view of Mr. Alfred P. Sloan, Jr., chairman of the board of the General Motors Corporation, that "... if corporations do not intervene with generous donations, the federal government will by default be given this responsibility. Government aid will mean increased taxes, with the final result that business will in effect be aiding . . . but without any freedom of choice."

Moreover, the Congress has lent strong encouragement to giving by corporations. Because of the nature of the present tax structure, a contribution by a corporation requires earnings roughly a quarter less than would be required if the same contributions were made out of dividends by individual stockholders with average income.

While the practice of corporate giving is growing, the record to date isn't too good. In the fifteen years that the tax laws have permitted corporations to deduct charitable contributions up to 5 per cent of their net taxable income, their grants for all purposes, of which education is just a part, have averaged closer to 1 per cent or less, I suspect. Figures available for three of those years, 1947-49, show this was the

- ▶ More and better education is needed if we are to maintain a free society.
- ▶ Men today need to know how to think; to weigh and appraise; to achieve steadiness of vision.
- ▶ A growing school of thought believes reasonable aid to education is a justified use of the corporation's money.

case. (Even so, the total averaged \$235 million a year.)

Now, if we take the figures of net profit before taxes of all corporations for the last five years, 1948-52, we get a glimpse of some very dramatic, even though theoretical, potentials. The average profit before taxes for those years was about \$37 billion per year—and 5 per cent of that figure is in excess of \$1¾ billion. I do not feel that corporations can reasonably be expected to give anything like such sums simply because the tax laws encourage it. But the figure does emphasize that in prosperous times corporate managers have ample leeway to make contributions when they believe that such contributions would constructively serve the interest of the corporation by benefiting the business community or the nation.

THE important thing is that corporate gifts should be made when the direct or indirect benefits—and I want to underscore *indirect* benefits—are worth more to the company than the costs after tax adjustments. On the other hand, gifts by publicly owned corporations can never be justified—no matter how small the gifts—when the motive of giving is based solely on personal associations, or is based simply on a tax allowance and nothing more.

What are these benefits? Are they only assumed, or are they real?

Education, more and better education, is needed if we are to maintain that most cherished of man's works—a free society. More than ever before, men today need to know how to think; to weigh and appraise; to achieve the steadiness of vision and purpose that wisdom brings.

The circle of problems that besets the American people is ever widening, calling in ever sterner tones for maturity and good judgment in their solution. Unless we have prudent and mature people on whom we can rely, great dangers are ahead for the general well-being of the country, and, incidentally, for stockholder's investments in corporations.

The direct benefits are more evident.

The task of management is becoming increasingly complicated, requiring a wide

AND EDUCATION

- ▶ **The corporate giver has gradually been taking on more of the load from the private giver.**
- ▶ **Maintaining the private liberal arts college as a genuinely independent institution is indispensable to our way of life.**
- ▶ **Freedom rests on the competition of free choice, both in the business world and in the world of ideas.**

diversity of talents and training. We must look more and more to institutions of higher learning for the men and women we need. Corporations pay the colleges and universities little or nothing for training the personnel which they now eagerly recruit each June. I am convinced that American business neither needs nor wants a free ride, least of all from our private educational institutions, which we know to be hard pressed financially. In my opinion, it is not good business to withhold from these institutions needed support.

Business and industry have been direct beneficiaries of American education in another way. It has given us prosperous and more valuable markets. The more effective our higher educational system and the larger the number it can serve, the greater will be the nation's earning power and the greater the consumption of commodities. I believe education has done more to create and expand markets for business than any other force in America.

It is particularly important for us to retain a strong and vigorous group of private institutions of higher learning. The independent liberal arts college especially must be preserved in its full vigor. So-called liberal or general education is essential to the kind of free society in which business moves ahead and prospers. Maintaining the private liberal arts college as a genuinely independent institution, I believe, is indispensable to our way of life. For freedom rests on the competition of free choice, both in the business world and in the world of ideas.

American corporations would be among the first to suffer if, because of inadequate support, freedom of choice in the educational world should be limited to state-supported colleges and universities. Our intellectual resources, our spiritual and material well-being and our basic freedoms depend in considerable measure upon how well higher education performs its essential tasks. The quality of that performance will suffer if, because of inadequate support, the private educational institutions are taken from private hands.

Having said all this, I must admit that it is no easy thing for corporation man-

agers to know how to give to education. The most popular forms of educational giving seem to fall into four categories:

- 1) Special purpose gifts to institutions in the local community;
- 2) Gifts for research—usually in the natural sciences;
- 3) Fellowships and scholarships;
- 4) Gifts for general educational purposes to individual colleges, or to groups of colleges.

Each of these approaches has its merits. Each also has its limitations or unsolved problems. This is particularly true with respect to support of general education in private institutions.

IT seems to me that the biggest remaining roadblock is that the business world simply does not now know enough about the "how" of giving to education. This may sound strange. But, for example, we businessmen do not know how to measure relative academic merit and performance; and, to be quite frank, some of us are not sure that anyone else has developed a really effective means of doing so.

Even though we should get satisfactory answers regarding merit, would it follow that gifts should be concentrated among the most meritorious institutions, letting the others die on the vine?

If we need, as I understand we do, all of our present educational capacity, perhaps we should aim instead at ways of bringing the quality of the less favored college up to desired standards.

In the absence of other criteria, the allocation of business grants may follow either the channel of the "old school tie," or tend to gravitate toward institutions that most closely represent the point of view of the donor. Neither of these is a satisfactory basis. Some careful attention must be given promptly to developing adequate standards to guide business policies on financial aid to higher education.

A group of businessmen have worked for some months to do something constructive about this situation. The group includes Mr. Irving Olds, until recently, chairman of the board of United States Steel Corporation; Mr. Alfred P. Sloan, Jr.,

chairman of the General Motors Corporation; Mr. Walter Paepeke, chairman of the Container Corporation of America; and Mr. Henning W. Prentis, Jr., chairman of the Armstrong Cork Company. These four, with the writer, are the incorporators of a membership corporation recently organized under the laws of the State of New York. It is called the Council for Financial Aid to Education, Inc.

A few sentences from the Certificate of Incorporation of this new corporation describe its main purposes and objectives:

"The purposes for which the corporation is to be formed are: To promote a better understanding by the managers and owners of American business . . . and by the members of the public, of the substantial contribution which higher education has made and is making to the effectiveness, the skill, the growth and the success of American business and to the development of this country, and to aid in bringing about a recognition by the managers and owners of American business . . . and by the members of the public, of the importance to American business and to the nation as a whole of securing adequate financial support of higher education in this country

"To serve in an advisory and cooperative capacity, both to prospective contributors and to educational institutions in connection with the formulation, adoption and carrying out of the programs of various kinds having for their general purpose the obtaining of financial support"

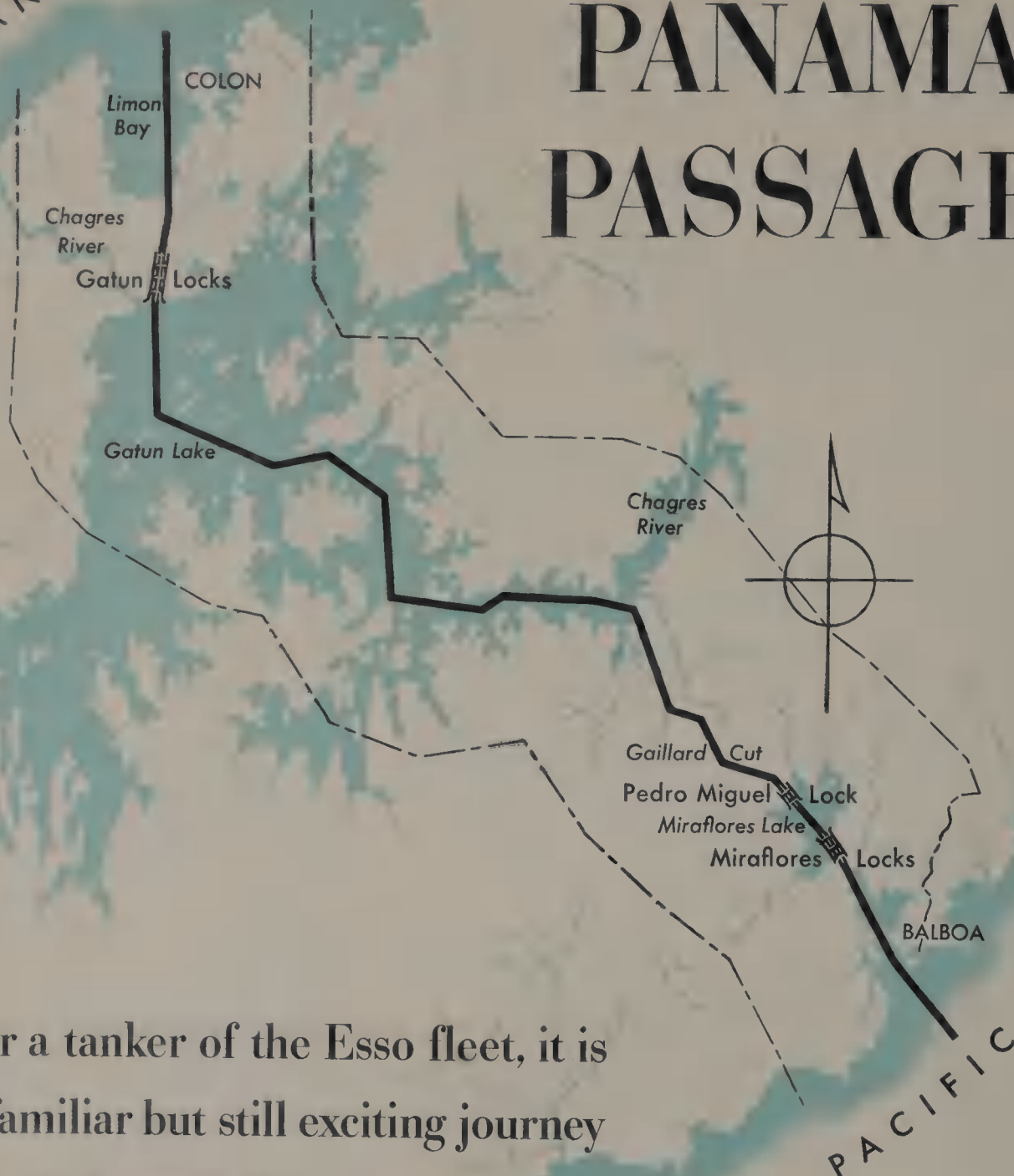
The Certificate of Incorporation specifies that "the corporation is not itself to distribute funds to educational institutions or to solicit contributions for such purpose." A phrase used recently by a member of the new administration in Washington also applies here. "No ninety-day miracles can be anticipated." To apply the principles of the charter to practical working arrangements is a longer job than that.

IT would be inaccurate to say that we are today seeing the adoption of a new set of attitudes by corporate managers toward the place of corporations in society.

That change occurred some years ago. But it is appropriate to predict that business management will continue to enlarge its social vision; and that business contributions, including those to education, will become an important aspect of this enlarging viewpoint. The interests of the stockholders of the corporations of America require no less.

ATLANTIC

PANAMA PASSAGE



For a tanker of the Esso fleet, it is
a familiar but still exciting journey

by James H. Winchester



SHIP MOVEMENTS in the Canal and its approaches are plotted on this large-scale wall diagram in the Port Captain's office at Balboa



THE *Esso Manhattan*, riding high in the water, en route in ballast from Buenaventura, Colombia, to Baytown, Texas, slips through the early morning mist, toward Balboa and the Pacific entrance to the Panama Canal.

Behind us the sun is rising out of the Pacific. Tonight, in a phenomenon of geography, it will set in the Atlantic Ocean, fifty-one miles on the other side of Panama.

Here, at this tropical crossroads of the world, this happens because the Isthmus of Panama, a narrow, mountainous ribbon of jungle, folds around itself like the letter "S". This accounts for the fact that in going through the Canal from the Pacific to the Atlantic we are traveling from southeast to northwest, not, as might be supposed, from west to east.

On the huge board in the Port Captain's

office in Balboa, where all ships going through the Canal or nearing its approaches are plotted, the *Manhattan* is marked as the number one northbound transit of the day. Directly behind us is the *Esso Roanoke*. Beyond her, some still at anchor awaiting their pilots, are two white-hulled Honduran banana boats, a Greek freighter, a British tramp, a Norwegian tanker. At Colon, at the Atlantic entrance, similarly, other merchantmen are lining up to head southward to the Pacific.

Still hull down below the horizons of both oceans are scores of other vessels. For the flow of shipping through the Panama Canal, the world's most strategic waterway, is unceasing. Twenty to thirty ships a day use its facilities. Last year 33,611,000 long tons of cargo passed through the locks, setting a new record.

GREEN HILLS rise above the narrow, winding channel of Gaillard Cut. Rounding the bend is the tanker *Quemado Lake*, chartered to Esso

But so smoothly does the Canal handle this tremendous amount of traffic that its vital importance to world trade is often overlooked or momentarily forgotten.

Vessels going to San Francisco from New York, for example, would have to travel 13,135 miles if they sailed the long way around the tip of South America. Through the Panama Canal it is only 5,262 miles. New York to Sydney, Australia, via the Suez Canal is 14,560 miles. By way of Panama it is only 9,850 miles.

The Canal is an important and integral link, too, in the world-wide operations of the Esso tanker fleet, as it is for tankers of all flags. Petroleum products have always constituted an important part of the Canal's

annual tonnage. In 1952, the last period for which full figures have been assembled, oil was the largest single commodity transported through the Panama Canal.

Oil is required also to keep the Canal machinery running efficiently and as we pass through the broad, smooth reaches of Balboa Basin, the huge tank farms, where Panama's petroleum supplies are stored, loom large along the waterfront. Past these storage areas, beyond the commercial piers, the drydocks and the military installations, on the highest hill in sight, sits the tile-roofed Panama Canal Administration Building.

Intermittent showers, a not unusual occurrence in Panama, where a foot of water has been known to fall between sunrise and sunset during the rainy season, obscure this seat of the Canal's government from sight. But not for long. The sun, brighter than ever, reappears in a few minutes. It is not yet seven o'clock but already the humid, tropic heat presses in upon us. From the open wing of the *Manhattan's* bridge we watch the jungle slip past on either side. The sweetish smell of the wild flowers growing so abundantly along the banks of the narrow, dredged-out Rio Grande River, through which we are pass-

ing, floats across the bridge. We seem to be sailing through a hothouse.

Eight miles up the sluggish Rio Grande the great steel spans of the Miraflores Bridge open to let us glide through.

"That's the only direct surface link between North and South America," the *Manhattan's* leathery skipper, Captain Henry J. Koenigs, tells us.

There is little about the Canal Zone, its history and its operations that Captain Koenigs doesn't know. Before World War I he planted mines in these waters as a civilian sailor for the U. S. Army Engineers. Since then, in his twenty-one years aboard Esso tankers, he's made seventeen other trips through the Canal. As intimately as he knows this waterway, though, he still has many more trips to make to match the record of Captain W. G. Farrell, the Canal pilot who will be on the *Manhattan's* bridge until we reach open water again. Captain Farrell has been taking ships through the Canal for over a dozen years, has made over 1,500 trips through the locks.

"Stop the engines."

Captain Farrell passes the order to Second Mate Albert Brown, the watch officer. Directly ahead are the concrete walls and towering iron and steel gates of the Miraflores Locks, the first two steps upward of this staircase over the mountains. Slowly, carried forward only by her own momen-

tum, the *Manhattan* eases toward the right chamber of the locks.

Putting a vessel through a Panama Canal lock is a complex mechanical operation. But it all starts simply enough with two Panamanian seamen rowing out to meet us in a skiff to toss tow lines aboard. Ashore, these lines are made fast to powerful electric towing locomotives, known as "mules," which run on rails along the top of the lock walls. The number of "mules" used depends on the size of the ship.

Never exceeding a speed of two miles an hour, even when descending the steep, roller-coaster-like inclines between lock levels, the "mules" control the ship entirely on signals from the pilot.

ON the open wing of the bridge Captain Farrell raises his hands over his head and brings them down slowly in front to shoulder level. That's the signal to start towing. Slowly we inch forward.

Crewmen, many with cameras, line our rails as we nose toward the first lock gates, towering above us like the sheer walls of a skyscraper.

Atop the lock wall the lockmaster, the major domo of this show, gauges our position with a practiced eye. He plugs his portable telephone into a convenient jack and relays word to the control tower that we are ready to start our lift.

AT GATUN LOCKS the *Esso Manhattan* settles gently seaward as water drains from the second chamber in the three-stage, 85-foot descent





EASED SLOWLY into the last chamber, the gate astern still open, the *Manhattan* has a distant view of the *Esso Roanoke* nearing Lock No. 1

Half a hundred feet above us, in a glass paneled room not unlike the control tower at a modern airport, an operator puts down the telephone and reaches for a lever. Deep in the bowels of the lock walls, in huge subterranean tunnels, machinery so delicately oiled and balanced that a single 25-horsepower motor is all that's needed to open and close the 730-ton iron gates, begins to hum.

Ahead of us a huge chain, suspended in front of the lock gates, begins to slide into the water. "That's there to stop us from ramming the gates if something goes wrong," Captain Koenigs tells us.

Along the walls, on a signal from our pilot, the "mules" strain to their tow. We move forward, crawling, into the first lock chamber itself.

"Okay, she's clear of the gate and chain." The lockmaster's voice carries easily through the morning air to the *Manhattan's* bridge. Captain Farrell crosses his arms on his chest, then throws them open at shoulder level. That's the signal to stop towing.

Behind us, the ponderous gates swing closed. We're sitting in a 1,000-foot-long concrete, water-filled bathtub, 110 feet wide. Four high walls surround us. The sky can be seen only by looking upward.

"Start locking!" the lockmaster calls into his phone. In the tower, the operator flips another switch. From aqueducts located deep inside the walls, water surges into our bathtub with a rush. We are lifted inexorably with it as its level rises.

WATER to operate the Canal's locks comes from three lakes, Miraflores, Madden and Gatun, which in turn are supplied, principally, by the Chagres River. A complex system of dams controls the levels of these lakes, assuring a never-failing source of water, even during the dry season. Miraflores Lake, near the Pacific end, was created by building four dams. Gatun Lake was created by building a gigantic earthen dam across the Chagres Valley at the Atlantic end. This lake, which provides the greatest stretch of water making up the Canal channel, sits 85 feet above sea level. The Canal's locks, three sets at either end, serve to lift vessels to the lake's surface, or lower them back to sea level. It is through the first set of these locks, at Miraflores, that we are now passing.

It takes fifteen minutes and 26 million gallons of water to lift us to the level of the second Miraflores lock. When the water in our chamber balances that of the upper chamber, the gates between the two are

opened. The "mules" pull us forward again. Once inside the second chamber, the gates between the two steps are closed silently. The water surges in again with a rush and the locking process, lifting us up another 30 feet, is repeated.

Forty-three minutes after entering the Miraflores locks the last set of gates opens before us. Our tow lines are cast off and we steam out, under our own power, onto the surface of mile-wide Miraflores Lake. The single step of the Pedro Miguel Lock at the north end of this body of water will lift us up another 31 feet.

The lockage at Pedro Miguel is identical with the process at Miraflores. It takes half an hour.

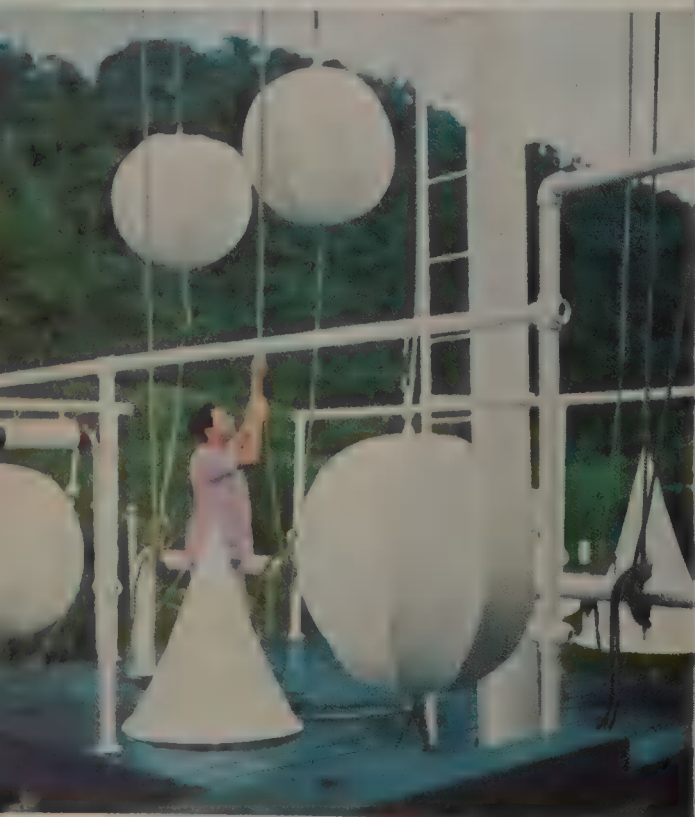
"Six knots," the pilot orders as we cast off our lines. Ahead—a granite-walled "V" cut through the mountains—is twisting Gaillard Cut, the narrowest, most treacherous stretch of the Canal.

Whenever anyone speaks now of the almost insurmountable difficulties which had to be overcome in building the Panama Canal he is probably recalling the problems encountered in carving this cut through the mountains. The backbone of the Sierras

ELECTRIC "MULES," some towing, some braking, move ships in the locks. A very large ship has used fourteen; *Manhattan* needed eight



SIGNAL STATIONS at every turn of tricky Gaillard Cut tell pilots whether the channel is clear. Radio is needed in heavy fog or rain



ocean-end locks had been inaugurated by the French. But the more than 100 million yards of dirt and stone which had to be moved from this area before a navigable channel could be completed almost stopped America's attempts too.

Slides were the big problem. An Army engineer, D. D. Gaillard, licked them. It took him ten years, cost hundreds of lives, millions of dollars and untold tribulations, but the slides were finally controlled—sufficiently, anyway, to allow the channel to be opened. Several times since then, the last time in 1931, slides in this section have halted ship traffic briefly.

IN the cut, Captain Farrell holds the *Manhattan* to the prescribed six knots. At each sharp bend sits a signal station. The cone and ball displayed on each station's east yardarm indicates we have a clear passage ahead around the bend. At night, a red light over a white one is the "go ahead" signal; in heavy rain or fog, clearances for the sharp bends are given by short-wave radio. Before the sharpest of the turns, great white-painted "W's" are set on the bank. These mean "whistle," to warn any oncoming ships.

Out of the cut, the *Manhattan* picks up speed. A few miles farther on, we move past the mouth of the Chagres River. Now we are in Gatun Lake.

Ahead, we catch sight of smoke rising from behind the green jungle of one of the lake's innumerable islands. A few minutes later a passenger-cargo liner slips into view from around a bend in the winding channel. It is the *Santa Isabel*, bound for the west coast of South America, the first of the day's southbound transits.

balked the Spaniards, as early as 1523, in their efforts to find a water route between the oceans. Again, it was this rugged stretch of rock that twice balked the French in their costly attempts to cut a canal across Panama.

When the United States purchased the rights and equipment of the French in 1904, to start work on their own, the cut was still the biggest headache. Thanks to the genius of Dr. William C. Gorgas, a U. S. Army doctor, yellow fever and malaria, which earlier had claimed the lives of so many thousand Canal workers, were conquered. Much of the work on the excavation for the approaches and for the



Passing another ship is a welcome break in the routine aboard both vessels. We crowd to the bridge's rail to watch. But after this first passing, and as the parade of southbound ships continues, one every fifteen minutes or so, interest wanes. The jungle-coated islands bordering the channel take our attention.

"They look peaceful enough," Captain Koenigs laughs as we point out one particularly tranquil group. "But you wouldn't want to go ashore there for very long. The monkeys probably wouldn't bother you but there are plenty of snakes, including the fer-de-lance and the boa."

There are alligators and crocodiles on the banks and in the waters around us, too, as further reminder that this serene voyage is deep in the tropics. Only the passing ships and the well-kept channel buoys indicate the hand of civilization.

Directly ahead of us now, at one minute past noon, around the last crooked bend

of the channel in Gatun Lake, are the busy Gatun Locks whose three steps will lower us the 85 feet back down to sea level.

Mechanically, the process of lowering our tanker down to the sea again is the same as when we were lifted up in the Miraflores and Pedro Miguel Locks. Only this time, instead of entering an almost empty chamber we go into one already filled to the top with water. Then this water is drained out, flowing out into the sea, and we're dropped down to the water level of the chamber below us.

The blazing tropic sun has passed the day's midway mark when, at 1:30 p.m., a little over seven and a half hours after we first entered the Canal at Balboa, the last lock gates at Gatun swing open before us.

A few miles downstream is Colon; beyond is the Atlantic. As we push on into Limon Bay, out of the channel, two fast launches put out from shore. A few minutes later they swing into position along-

side rope ladders dangling down the side of the still-moving *Manhattan*. Fresh food supplies, ordered hours before on the other side of the Canal, are hoisted to the *Manhattan's* deck.

With the supplies aboard, the Panamanian seamen, who have transited the Canal aboard the *Manhattan* to handle the lines in the locks, scamper down the ladder. The pilot, too, disappears over the side. He'll catch the 4:30 train back to Balboa.

The launches veer away, head shoreward. On the *Manhattan's* bridge, Captain Koenigs signals a parting salute. The deep bass roar of the whistle echoes back from the jungle. The wake behind the tanker widens and spreads as speed is increased.

Next stop is Baytown, Texas, 100 hours away.

THE GREAT SHORTCUT from Pacific to Atlantic begins here at Balboa Basin. The *Manhattan's* passage took seven and one-half hours





*The right-of-way man is an amateur lawyer
who can search courthouse records*

HE HAS COUSINS BY THE DOZENS

The right-of-way man's job is to win friends along the pipeline

IN the lush countryside of southern Louisiana, a new crude-oil pipeline was scheduled to pass squarely through a grove of magnolia trees. Presently there came on the scene a right-of-way man, representing the pipeline company, to talk to the owner of the grove about compensation for his loss of trees.

But instead of talking about trees, the owner talked about poetry. Poetry was his profession, and the magnolias furnished

him inspiration. In taking his trees, he argued, the pipeline was taking a source of income.

The test of a right-of-way man is how he meets the unexpected. This one knew that verse was a less readily marketable product than, say, alfalfa. But he also knew that writers, even poets, sometimes hit the jackpot.

With no precedent to guide him, he struck a mental balance between the prob-

able and the possible, took a breath and mentioned a figure. The poet, perhaps surprised at this quick material recognition of his talent, accepted the offer, and the two parted happily.

Because most of the work of a right-of-way man ("R/W man," for brevity) is fairly routine, he really prizes a case like that of the poet and the magnolias. In his off hours he likes to swap his best stories with other R/W men the way fishermen

exchange yarns of spectacular catches.

In recent months, Interstate Oil Pipe Line Company, a Jersey Standard affiliate, has been engaged in a major rebuilding program which has kept all its R/W men very busy indeed. As a result, the company's home office in Shreveport, Louisiana, has been buzzing with a crop of new stories, such as the one about the oysters.

An Interstate line in the Louisiana bayou country crossed a bed of oysters. Commercial oyster beds are seeded artificially and must be kept at just the proper conditions of water temperature, salinity, suspended sediment and so forth, if the oysters are to flourish. Now the dragline that dug a trench for the line across the bottom of the bayou had thrown up a quantity of heavy clay into the water. The oysterman said the oysters' life cycle had been interrupted and his investment was a total loss.

The R/W man in the case thought the claim rather high, but he was genuinely perplexed over some of the facts. How could he tell how many oysters had been seeded, or how many the grower could rea-

sonably have expected to harvest? How could he even be sure the entire crop was lost?

The R/W man was forced to become something of an oyster expert. He read for hours in libraries. He looked up people in the oyster industry and asked them questions. He came to the conclusion finally that the oysterman's claim was justified in almost every respect, and the company upon his recommendation paid the claim as presented.

The R/W man usually gets into his specialized line of work by way of some other job on the pipeline. He is generally a practical engineer as a result of having been around a lot of construction work. He has to know how to read a map, because he must be able to follow the route of a proposed pipeline before it has been surveyed—he gets permission from property owners for the surveyors to go to work. He is an amateur lawyer who can search courthouse records for clues to property titles and who can, in an emergency, draw up a contract with a land-

owner covering almost any routine matter. It helps immensely if he knows something about farming, because along most pipelines the land, if in use at all, is farmland.

Few city men, for example, understand the peculiar importance of fences to a farmer. Fences are the safe-deposit boxes of the farming business—they keep a man's stock intact. Pipeline companies know this, and they instruct their crews never to leave a fence down or a gate open when leaving a job.

A crew in Oklahoma once carelessly neglected this rule. In the pasture to the south of the open fence was a scrub bull of little value. In the pasture to the north were several heifers of high pedigree which the farmer was planning to use as the nucleus of a fancy herd. The bull deployed into the north pasture. The result was a crop of scrawny calves with few signs of their mothers' high breeding. The farmer called on the R/W man for redress.

At first glance this might seem, like the case of the poet's magnolia trees, a claim for intangible damages impossible to meas-



It helps the R/W man immensely if he understands something about farming

ure in dollars and cents. Actually, it was not. The farmer had suffered a very real and measurable loss, even though it was not out-of-pocket but potential. The R/W man understood this perfectly, and on his recommendation the company paid the farmer for the high-grade calves the farmer didn't get that year.

A man who is successful in right-of-way work invariably has the ability to get along readily with people of all kinds. He'll have friends on a first-name and stay-to-supper basis up and down his section of the line. They're his "cousins"—the R/W man's name for all property owners who are cooperative and pleasant to deal with. A veteran R/W man is extremely proud of the fact that he has hundreds of cousins.

Until recent years, the R/W man was a little known citizen outside the oil country of the Midcontinent and the Southwest. But he goes wherever pipelines are built, and the lines—some carrying crude oil, some refined products and some natural gas—have been multiplying at an astonishing rate, reaching east and north into New England and west across the Rockies to the Pacific Coast.

Last year was the biggest pipeline construction year in history. The approximately 160,000 miles of oil pipeline in the United States are an indispensable part of

our system of bulk freight transportation. They are also its least conspicuous part—an invisible, noiseless, twenty-four-hour-a-day operation.

THE R/W man's part in this operation begins when the engineers present the first rough map of a new pipeline route. Then he sets out, in the car that is his second home, to obtain permission to survey and later to buy right-of-way ahead of the clearing crew and construction gang. There is nothing relaxing about this part of the R/W man's work, because the clearing and construction men sometimes follow very closely behind him. If he strikes bad luck, he may find that he is holding up the whole procession.

Among his various kinds of bad luck, the missing landowner is more common than the stubborn one. There was, for example, a Louisiana tract in which twenty members of one family owned an interest. The R/W man needed all twenty signatures. The bad luck was that the twenty relatives were scattered all over a parish (county). He got the signatures and wrote twenty checks, ranging down to twenty-two cents—in the nick of time before the clearing crew caught up with him.

The property owner who refuses to do business with the R/W man is rare, but he

exists. In his case, the company may exercise its right of eminent domain. An oil pipeline such as Interstate has this right as a common carrier—a public means of transportation like a railroad, obligated to accept for transportation any crude oil properly offered for shipment. It may, through judicial procedure, request the courts for permission to cross the lands involved, upon payment of just compensation. Most states by statute extend this right to common carriers.

But the company is naturally reluctant to use this right, and exercises it only when all efforts to negotiate have failed, and where irreparable loss from delay is likely to result. The company has much to lose by having enemies along its right-of-way, and everything to gain by having friends, because it will have to deal, as long as the line remains in operation, with the people whose land it crosses. The R/W man therefore seeks to make his clients happy, by fair dealing and just payment for damages.

Except in certain rare cases, the R/W man doesn't buy any land. What he buys is permission to lay a pipeline across the property. This kind of contract is called an easement. The standard right-of-way contract obligates the company to restore the soil and repair fences that may have



*To be successful in right-of-way work
requires the ability to get along with people*

been disturbed. (Any other damage is settled for separately.) The contract also gives the company the right of access to the property to repair, replace or remove the line, or to lay another line parallel to it for a similar fee. Whenever the company does return for one of these purposes, the R/W man comes back too, to see that the property is restored to its previous state of usefulness and, if the owner has suffered any loss, to see that he is reimbursed for it.

The owner retains the full use of his land on the right-of-way, except that he may not locate permanent installations too close to it, for the mutual protection of pipeline and property. (Owners have been known to forget, since there is often no visible reminder of it, the existence of a pipeline under their land.)

PAYMENT for right-of-way varies from one locality to another. Probably 95 per cent of landowners sign the R/W easement form readily. The other 5 per cent are the spice of the R/W man's existence. Though he grumbles to his headquarters about his difficult cases, secretly he regards every one as a challenge to his persuasive talents. Converting a reluctant landowner into a cousin is a thoroughly satisfying experience.

Doing an inexpensive favor may be the way to secure an elusive signature. An R/W man tried vainly to sign up a landowner who had a painful boil on the neck. The R/W man didn't know whether he was fighting the boil or a case of natural stubbornness, but he took his departure, drove to town, and returned unannounced with medicine recommended for boils. It was the winning play; he got the signature without even having his remedy tested.

Unusual cases may require unconventional approaches. An R/W man was warned to be cautious in calling at a remote farm. The woman who lived there was known to have seventeen Chihuahuas and a shotgun. The neighbors said she was mean.

The R/W man had had some success in thawing tough characters by meeting them on their own terms. He approached the farmhouse boldly but remained outside the gate while he announced himself. The lady stalked from the house, carrying the shotgun and surrounded by a yardful of squeaking Chihuahuas. She glared at him. "Whaddya want?"

The R/W man glared right back. "I'm looking for the meanest woman in the county," he said.

"That's me," announced his quarry.

"I don't think you're so mean," he said. "You're still talking."

She started to raise the shotgun, and the R/W man made a lightning re-estimate of the situation. "Besides," he said rapidly,



*Converting a reluctant landowner into a cousin
is the R/W man's most satisfying experience*

"a real mean person wouldn't be keeping all those fine dogs."

She lowered the gun a bit. "You like those little fellers, hey?"

"Smartest looking dogs I've seen around here anywhere."

She laid down the gun and picked up a Chihuahua. "Now this feller here . . ." she began.

Sixteen dogs and three hours later, the R/W man departed with the lady's signature in his briefcase. He never did get inside the gate.

ANOTHER R/W man had to inform a young bride that a crew would be crossing her lawn to lay a new line alongside an old one. This was the bride's first house of her own, and her first garden. The neat picket fence, the perfect lawn, the brilliant flower borders were painstakingly

tended. The young woman was expecting a baby. She was confident it would be a boy, and she planned to give him a puppy; in fact, a white shingled doghouse already stood in the yard. Until the R/W man told her, she hadn't even known that a pipeline crossed the property. She was a cousin, brave, though tearful.

The picket fence came down, and the ditching machine ripped through lawn and flowerbeds on schedule. But it was followed, only a couple of days later, by the R/W man and a crew of nurserymen with a truckful of plants. In a day of diligent labor they covered every scar and set the garden blooming again.

Still later, the R/W man made another call. This time he left behind him a cocker spaniel puppy for the expected boy.

As it happened, the baby was a girl. An R/W man can't arrange everything.

MUSIC ON THE MOVE

ONE afternoon last year, in the little mountain town of Banner Elk, North Carolina, a symphony orchestra crowded itself on a makeshift stage in the town's only school-house. Out front sat 1,000 children, intent and silent. They heard music by Beethoven and Coates and Percy Grainger. Then, when the orchestra broke into "She'll Be Comin' Round the Mountain," they sang out with all their might.

It will be heard again this year in Banner Elk, in Asheville, in Roanoke Rapids and Spindale—and in dozens of other cities, towns and villages which are scheduled for a visit from the orchestra on wheels—the North Carolina Symphony.

This unique symphony has no home of its own. It spends its entire season in busses, on the road, taking music to as many people in as many places as it can.

So, last January 14, conductor Benjamin Swalin, his wife and twenty-five musicians who make up the Little Symphony, piled into a big red and yellow bus and set off on their annual 9,000-mile swing of North Carolina. The Little Symphony plays the small towns; larger cities wait their turn after mid-season, when another bus and forty more musicians join the troupe to form the complete symphony. By June, when their season ends, the little and full symphonies together will have reached 125,000 children and 75,000 adults, through 140 concerts.



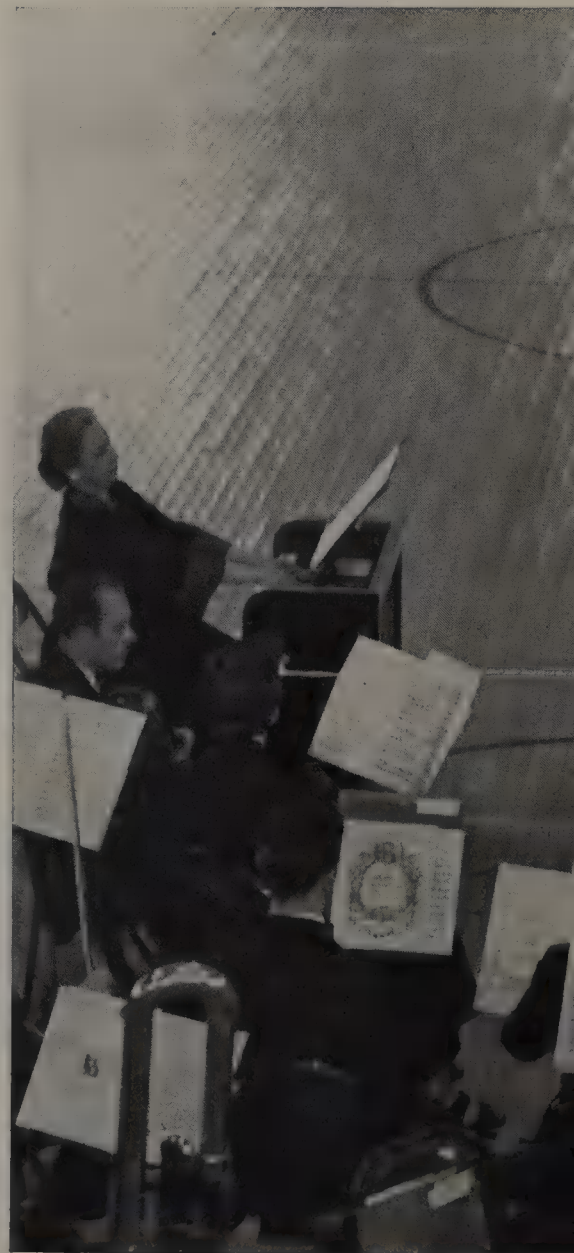
THE ORCHESTRA arrives at Hickory for an overnight stop on its 9,000-mile concert tour of North Carolina



ON THE ROAD, players relax between concerts. During four months, busses become as familiar as home to the musicians



GAMES, like charades, help players to pass traveling time. This orchestra has no home, spends entire season on the road



They take Beethoven and Brahms and Mozart to the Sawdust Tabernacle in Franklin, which is heated by a single pot-bellied stove. In Cape Hatteras they sit in a one-room school where the lighting is so poor the musicians play from memory. There are more formal concerts, too, in big city auditoriums. On tour, the players give two concerts a day—one in the afternoon for children and one in the evening for adults. Children's concerts are free.

The North Carolina Symphony belongs to the people of the state. Through their two-dollar subscriptions (numbering some 30,000 now), plus admission fees and contributions, they provide the largest source of the orchestra's income.

This, to lanky, sandy-haired Dr. Swalin, is as it should be. "The arts," he says, "must belong to all the people and not the few." By this credo he lives and works. With it he breathed life into the orchestra, and with it he has kept the orchestra alive under the most discouraging circumstances.

While only eight years old in its present form, the symphony has an on-again, off-again history that dates back to the thirties. In 1939, Dr. Swalin (then at the University of North Carolina), his wife and playwright Paul Green scraped together \$200 and enough volunteers among housewives, clerks, merchants, teachers and students to form an orches-

tra. At their first concert, in 1940, they got a total of eighty dollars, and a warm response from their audience.

Somehow, Dr. Swalin kept the orchestra going through the war years. Interest in his project grew, and in 1943 the state legislature voted \$2,000 for its support, making it the nation's first symphonic orchestra to receive official recognition and aid from a state government. (In 1949 the legislature raised its annual ante to \$15,000.)

But, even as enthusiasm spread, it became more and more apparent that an orchestra of volunteers just wouldn't work. So in 1944 Dr. Swalin asked the citizens of the state to contribute funds to establish a new professional orchestra for North Carolina. The next year that orchestra had its first tour; it will complete its eighth this spring.

The struggle to keep going continues, for even with its airtight budget, expenses constantly threaten to exceed income. But the people are enthusiastic. That, for Dr. Swalin, is enough.

What this orchestra means to the people is indicated by countless incidents like that of one little mountain boy who, at the close of the free children's concert in his village, went up to the platform, took a crumpled dollar from his faded overalls, placed it on the table as a token of his appreciation, and slipped back into the crowd again without a word.

BUSSES stop for a rest high in the mountains. Full orchestra uses two busses. An extra truck follows with the instruments

IN A GYMNASIUM at Burlington school, the orchestra broadcasts a concert. The celesta player at left is Mrs. Swalin

MOUNTAIN children arrive by bus to hear concert in Asheville. Some have traveled fifty miles to hear the orchestra play



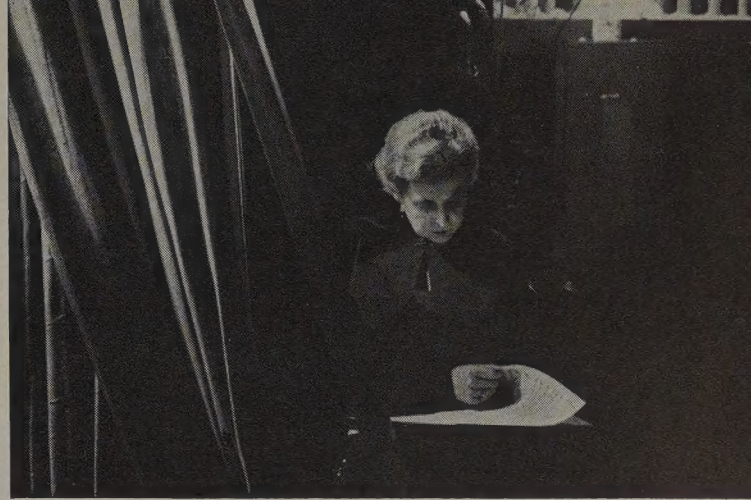
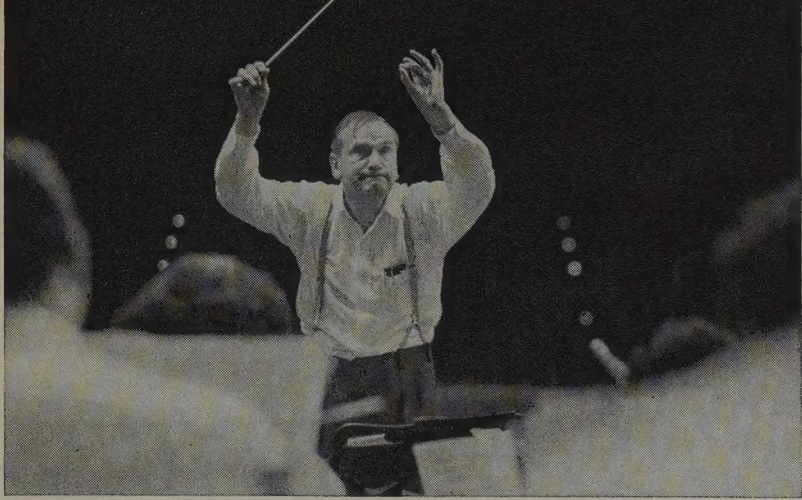
CONDUCTING in his shirtsleeves, Dr. Swalin (right) intently rehearses his orchestra for a big concert in Asheville



A LITTLE GIRL at Hickory strums a gentle tone on the harp. Children's programs are informal, stress participation

AFTERNOON concerts belong to the children. Patients from an orthopedic hospital (center right) arrive at auditorium



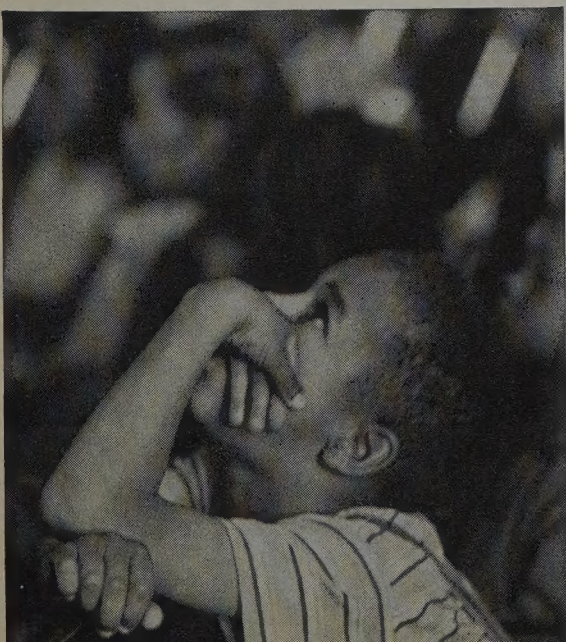


BACKSTAGE, Mrs. Swalin follows score. Among her dozen jobs are celesta playing and narrating for children's concerts



TUNING UP before a concert at Burlington, each player works at his own music, stands oblivious to others in the room

OVER A DRINK one youngster gets a briefing on the trombone. Last year some 125,000 children heard the orchestra



Oil Hunt in the North Country

INTO the vast Canadian frontier between Dawson Creek and Hudson Bay, during the last couple of years, men have been pushing the search for oil. Their meager discoveries to date indicate that Canada's Far Northwest—part of the provinces of Alberta and British Columbia and a slice of the Northwest Territories—is potentially an area warranting great exploration effort in the years ahead. This is part of the same West Canada basin that holds Turner Valley in southern Alberta, the prolific new oil fields of central Alberta, the older oil field of Norman Wells to the northwest, the Athabasca tar sands on the east.

This barren area is so huge and inhospitable that it will take decades before oilmen know its full potential. So far, the drilling rig has probed its depths and found oil and gas in a limited band near the town of Peace River, the most northern point of the railroad. But geologists and seismograph crews have wandered farther afield, to the Arctic Coast itself, in a search for clues to what lies under the desolate surface. And the drilling rig probably will follow them up during the coming years.

This is a land of violent contrasts. Summer brings gentle temperatures as high as 80 degrees, enough to thaw ice and muskeg several feet down from the surface. Winter—eight months of the year—marshals routine temperatures as low as 60 degrees below, when oil crews must avoid overexertion in the biting air. Refrigerator trucks that haul food to oil-company crews in summer are heated in winter to keep fresh vegetables from freezing.

In this harsh environment, North America's oil horizon is being pushed out by crews of Imperial Oil Limited, Canadian affiliate of Standard Oil Company (New Jersey), and by men of other companies. Let's hitch a ride with a couple of young geologists who are going into the bush.

This is summer; the sun shines brightly through the blue, dustless sky. The Beaver "float" plane climbs slowly from the Peace River, its single engine churning hard to lift a heavy cargo, including a canoe strapped to each pontoon. Some of the plane's seven seats have been removed to make way for the geologists' stores and equipment.

The plane takes off almost due north, following for a time the gravel-topped Mackenzie Highway, which runs from Edmonton to Hay River—the only road into the Northwest Territories. Far below, trucks are beating up little swirls of dust

as they carry supplies for trappers and miners, returning with furs and fish for the cities of the East.

On both sides of the highway, the terrain spreads out in endless monotony—forests of puny spruce or scrubby jack pine, stunted by cold; great open areas of greenish-brown muskeg; lakes and creeks by the hundreds; occasionally a river or a lake of heroic size.

But everywhere emptiness. Here appears a tiny settlement of miners of coal, lead, zinc; there, an Indian hamlet; then, a temporary camp of oilmen close by a river. (Waterways are the streets of the Far North.)

THREE hours out of Peace River, the Beaver slips down out of the sky for a smooth landing on a stream that, at this point, has widened into a small lake. The pilot brings the plane to shore, and the geologists unload their canoes and other gear. Then the Beaver is off again on other errands. The geologists set up camp, beginning with the portable radio that from now on will be their sole link with the outside, except when the Beaver brings in supplies and mail at intervals.

The job of surface geologists, such as these, is to read in visible outcroppings of rock the story of what lies far below the ground. Outcroppings of rock formations, properly mapped, can tell geologists much about subsurface formations that may contain oil. But, in the North Country, surface signs are rare. Ages ago great ice sheets crept down from the north, covering much of North America with glacial drift that buries most outcroppings.

And so the geologists, mostly following the lonely waterways, search painstakingly for elusive clues that rarely add up to a whole story. Still, as they comb the North Country in teams spread over thousands of miles of territory, they are gradually beginning to fill in the broader outlines of the area's geology.

The geologists can work all summer, until snows higher than a man blot out the landscape entirely. Then they return to civilization to study the results of their warm-weather work. Later, if surface geology findings warrant, the seismograph and the portable drilling rig move in.

Seismograph and drilling crews have certain advantages over the geologists: they live in groups in established camps; their insulated cabins (which can be moved on sleds) are warm in the most severe

weather; they have cooks, hot-water showers, washing machines, electric generators, many other comforts.

But, unlike the geologists, they can't function during the months of nice weather. The muskeg is against them.

MUSKEG is a spongy, mossy vegetation that covers two-thirds or three-quarters of all this North Country. Sometimes it lies atop the ground, sometimes it floats on water—but always it is wet. It can be as much as ninety feet deep. When clumps of trees grow in it, you can hardly tell it from real ground—except when your jeep or tractor sinks into it.

The heavy seismograph trucks and the much heavier drilling rigs can't get about on such terrain except when it is frozen. Freezes generally begin in October or November, but Imperial Oil doesn't move its drilling rigs in the North Country until after January 1, when it can be assured that muskeg and streams alike will be frozen six to twelve feet down—deep enough to take the heaviest loads. Sometimes early spring thaws isolate the drilling rigs on their winter locations, limiting the work of each rig to one hole a year.

Machines take a beating through these winter months. Pilots who fly in food and other supplies (using landing skis instead of pontoons or wheels) turn around quickly without shutting off their engines, to prevent their aircraft being immobilized in the bitter cold.

But the men themselves, amazingly, prosper in these temperatures. There are seldom sniffles or "flu" in this climate. The worst pest, peculiar to seismograph crews, is rabbits—herds that run up into the thousands. Not only do the bunnies like to chew the cables of the geophones, which pick up the seismic waves; their mere number, as they gallop over the terrain, thwarts the recording apparatus.

Lamentably, these rabbits don't make for hunting because they aren't good to eat. But food is no care at all to crews up north. By truck and by plane, Imperial Oil ships in regularly sides of beef and pork, crates of vegetables and fruits, the makings of bread and desserts, coffee in vast quantity. A day's work done, on seismograph or drilling rig, and a man can stow away a huge meal, sit back on his bunk sipping the rich, heavy coffee, and listen to some of the new recordings one of the boys brought back from his last trip outside.

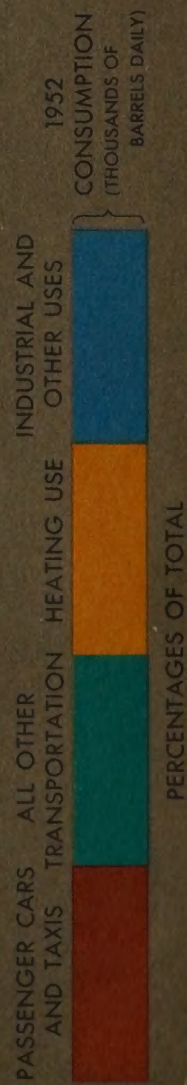
A rough life, in spots, but good.

SEISMIC SURVEYS in Canada's North Country reach a peak in winter, when muskeg and streams are frozen enough to support heavy equipment. Here, bulldozed road cuts across the Wabiskaw River





HOW OIL IS USED AROUND THE WORLD



The ways oil products are used vary greatly from place to place in the world. The map and graphs above show estimates of some of the striking variations produced by differences in climate, industrial development and availability of other energy sources such as coal. Since the seven major regions whose use of oil products is estimated here account for some 90 per cent of the free world's oil consumption, this is probably the most comprehensive survey of its kind yet undertaken. Jersey Standard studies this subject continuously in order better to anticipate changing consumer needs which may require adjustments in producing or refining operations.